# PLC COMMUNICATIONS

## In This Chapter...

**Introduction** . . . . . .6–2
Available PLC Protocols . . . . . .6–2
**C-more Micro-Graphic Communication Ports** . . . . . .6–4
**DirectLOGIC PLCs Password Protection** . . . . . .6–5
**Compatibility and Connection Charts** . . . . . .6–5
AutomationDirect Controllers . . . . . .6–5
RS-422A/RS-485A Communications . . . . . .6–5
Allen-Bradley . . . . . .6–5
GE, Mitsubishi, Omron, Modicon and Siemens . . . . . .6–5
**Cables from AutomationDirect** . . . . . .6–14
**Cables from AutomationDirect – Wiring Diagrams** . . . . . .6–16
**User Constructed Cables – Wiring Diagrams** . . . . . .6–24
**RS-422A Multi-Drop Wiring Diagram Example** . . . . . .6–34
**RS-485A Multi-Drop Wiring Diagram Example** . . . . . .6–36

# Introduction

The *C-more*® Color Micro-Graphic panels are capable of communicating with AutomationDirect Productivity Series, Do-more, CLICK, SOLO, GS Drives and the entire *Direct*LOGIC family of PLCs. The panel is capable of communicating using RS232, RS422 or RS485 on Port2.

The *C-more*® Micro-Graphic panel communicates using the following cables.

- EA-2CBL - connects to Productivity Series, Do-more, CLICK, DL05, DL105, DL205, DL350, DL450, H2-WINPLC phone jack: RJ12 - 15 pin D-sub.
- EA-2CBL-1 - connects to D2-250, D250-1, D2-260, DL06 VGA connector: 15-pin HD - 15 pin D-sub.

The panel also has the ability to communicate with Allen-Bradley PLCs that support the Allen-Bradley DF1 and DH485 protocols. Use Port2 with the following cables to connect the panel to a majority of Allen-Bradley PLCs.

- EA-MLOGIX-CBL – connects to AB MicroLogix 1000, 1100, 1200 1400 & 1500: 15-pin D-sub - 8-pin DIN
- EA-SLC-232-CBL – connects to AB SLC 5/03, /04, /05, ControlLogix, CompactLogix, FlexLogix: 15-pin D-sub - 9-pin Dshell female
- EA-PLC5-232-CBL – connects to AB PLC5: 15-pin Dshell - 25-pin Dshell
- EA-DH485-CBL – connects to AB MicroLogix, SLC500, and any PLC using AB AIC device: 15-pin Dshell - RJ45 8-pin

The PLC Compatibility and Connection Chart tables on the following pages list the various PLCs and protocols that can be configured. Other third party PLCs include GE, Mitsubishi, Omron, Modicon and Siemens. The rest of this chapter shows the pin to pin connections of available cables plus wiring diagrams to construct cables.

***NOTE:*** *Refer to the Compatability and Connection Charts beginning on page 6-7 for a listing of PLC connections for the C-more Micro-Graphic panel.*

***NOTE:*** *When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in* ***Low-Power Mode****. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.*

# Introduction (cont'd)

## Available PLC Protocols

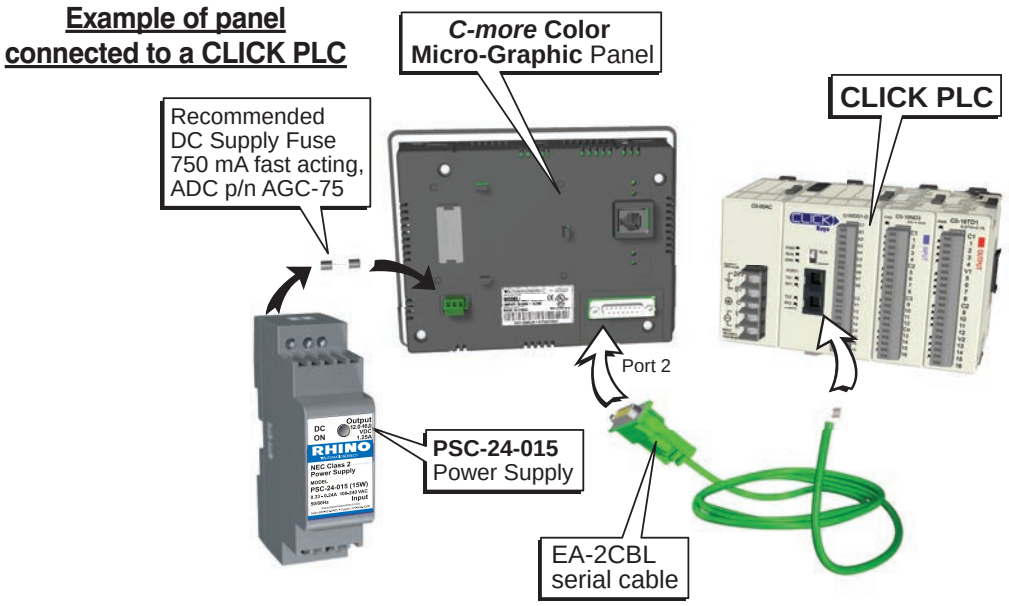
| PLC Drivers |
| --- |
| **Serial - port2 only** |
| AutomationDirect Productivity Series |
| AutomationDirect CLICK |
| AutomationDirect Do-more |
| AutomationDirect K-sequence |
| AutomationDirect DirectNET |
| AutomationDirect Modbus |
| AutomationDirect SOLO |
| AutomationDirect GS Drives |
| Modicon Modbus RTU |
| Entivity Modbus RTU |
| Allen-Bradley DF1 Full Duplex |
| Allen-Bradley DF1 Half Duplex |
| Allen-Bradley PLC5 DF1 |
| Allen-Bradley DH485 |
| GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro) |
| Mitsubishi FX |
| Mitsubishi Q, QnA |
| Omron Host Link (C200 Adapter, C500) |
| Omron FINS Serial (CJ1, CS1) |
| Siemens PPI (S7-200 CPU) |

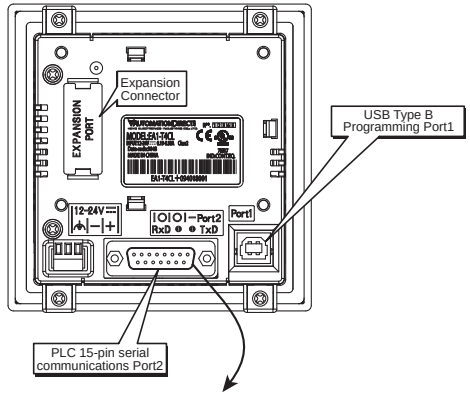


The panel can also be connected to more than one PLC by using RS-422 or RS-485 wired in a multi-drop configuration. See the example wiring diagrams at the end of this chapter for details.

If you have difficulty determining whether the particular PLC and/or protocol you are using will work with ***C-more*** Micro-Graphic panels, please contact our technical support group at 770-844-4200.

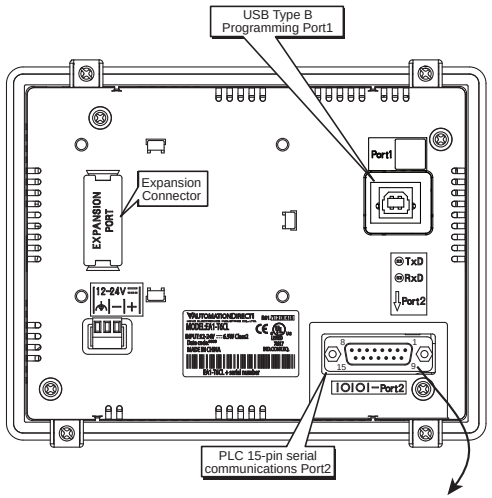
# C-more Micro-Graphic Communication Ports


Example of panel connected to a CLICK PLC
C-more Color Micro-Graphic Panel
CLICK PLC
Recommended DC Supply Fuse 750 mA fast acting, ADC p/n AGC-75
Port 2
PSC-24-015 Power Supply
EA-2CBL serial cable




| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | Frame GND | 6 | LE | 11 | TXD+ (422/485) |
| 2 | TXD (232C) | 7 | CTS (232C) | 12 | TXD– (422/485) |
| 3 | RXD (232C) | 8 | RTS (232C) | 13 | Term. Resistor |
| 4 | do not use | 9 | RXD+ (422/485) | 14 | do not use |
| 5 | Logic GND | 10 | RXD– (422/485) | 15 | do not use |

**RS-232/422/485** **EA1-T4CL**




| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | Frame GND | 6 | LE | 11 | TXD+ (422/485) |
| 2 | TXD (232C) | 7 | CTS (232C) | 12 | TXD– (422/485) |
| 3 | RXD (232C) | 8 | RTS (232C) | 13 | Term. Resistor |
| 4 | do not use | 9 | RXD+ (422/485) | 14 | do not use |
| 5 | Logic GND | 10 | RXD– (422/485) | 15 | do not use |

**EA1-T6CL** **RS-232/422/485**

# *Direct*LOGIC PLCs Password Protection

***NOTE:*** ***Direct****LOGIC PLCs support multi-level password protection of the ladder program. This allows password protection while not locking the communication port to an operator interface. The multilevel password can be invoked by creating a password with an upper case "A" followed by any variation of seven numeric characters (e.g. A1234567). Please refer to the specific PLC user manual for further details.*

# Compatibility and Connection Charts

The following pages include charts that list the recommended cables and/or manufactured devices that can be used to make up the communications link between several different controllers and the ***C-more*** Micro-Graphic panel. Port2 is a 15-pin D-sub communication port that supports RS-232, RS-485 and RS-422. An external class 2, 1 Amp @ 12-24 VDC external power source is required.

***Note:*** *Recommended DC power supply to power the* ***C-more*** *Micro-Graphic Panel,* ***AutomationDirect*** *Part No. PSC-24-015 or PSC-24-030.*

The chart also refers to wiring diagrams that can be used to construct cables for connecting the PLC's port to the panel's port. The user constructed cable diagrams start on page 6-24.

## AutomationDirect Controllers

### AutomationDirect Productivity Series, CLICK, Do-more, DirectLogic, SOLO Temperature Controller and GS Drives

Drivers specific to these AutomationDirect control devices make it convienient to communicate with the ***C-more*** Micro-Graphic panels and simplify configuring objects with controller addresses.

## RS-422A/RS-485A Communications

When using the RS-422A/RS-485A communications capabilities of the ***C-more*** Micro-Graphic Serial Port (Port 2), the termination resistor is placed between the **RXD–** and **RXD+** terminals on the PLC side of the connection between the touch panel and PLC. The Termination Resistor value is based on the characteristic impedance of the cable being used. To enable the built-in 120 Ohm Termination Resistor, jumper pin **13** (termination resistor) to pin **9** (**RXD+**) on the ***C-more*** Micro-Graphic 15-pin PLC communications port.

## Allen-Bradley

As stated in this chapter's introduction, the panel also has the ability to communicate with Allen-Bradley PLCs that support the Allen-Bradley DF1 and DH485 protocols. The chart for the various Allen-Bradley PLCs includes recommended cables.

## GE, Mitsubishi, Omron, Modicon and Siemens

Other 3rd party PLCs can be used with the ***C-more*** Micro-Graphic panel. These PLCs are listed in a chart and various wiring diagrams are shown to allow connectivity.

## How to use the Compatibility and Connection Charts

1.) Find the Controller or PLC Family being used.

2.) Find the particular Controller or PLC model in the Controller family.

3.) Determine the cable and other components, manufactured or user constructed, are required.

**Example**



| Compatibility & Connection Chart | | | | | |
|---|---|---|---|---|---|
| | Controller | | | *C-more* Micro-Graphic Panel | |
| Family | CPU | PLC Port & Type | | Panel to PLC Cabling Components Required for Specific Port and Protocol being used.<br>**External DC Power Supply**<br>Using panel's Port2<br>DB 15-pin - female | |
| | | | | Protocol(s) Supported | Components & Network Type |
| **CLICK** | all versions | Port1<br>RJ12 - 6 pin | | AutomationDirect Modbus (CLICK) | **EA-2CBL**<br>RS-232 |
| | | Port2<br>RJ12 - 6 pin | | | |
| | Analog CPUs | Port3<br>Terminal block - 3 pin | | | *** See Diagram 16**<br>RS-485 |
| **Productivity3000** | all versions | RS-232<br>RJ12 - 6 pin | | AutomationDirect Productivity3000 Serial (P3-550) | **EA-2CBL**<br>RS-232 |
| | | RS-232 Port Terminal block - 3 pin | | | *** See Diagram 17**<br>RS-485 |
| ***Direct*LOGIC DL05** | all versions | Port 1<br>RJ12 - 6 pin | | K-sequence, ***Direct*NET**, Modbus RTU | **EA-2CBL**<br>RS-232 |
| | | Port 2<br>RJ12 - 6 pin | | | |
| | D0-DCM | Port 1<br>RJ12 - 6 pin | | K-sequence, ***Direct*NET**, Modbus RTU | **EA-2CBL**<br>RS-232 |
| | | Port 2<br>DB15HD<br>(female) | | | **EA-2CBL-1**<br>RS-232 |
| | | | | | *** See Diagram 1**<br>RS-422 |
| | | | | Modbus RTU | *** See Diagram 2**<br>RS-485<br>Modbus only |

## AutomationDirect CLICK PLC, ProductivitySeries, Do-more, SOLO Temperature Controller and GS Drives
## Panel Powered via external power supply, Port2 Communications

| Compatibility & Connection Chart | | | | |
|---|---|---|---|---|
| **Controller** | | | ***C-more* Micro-Graphic Panel** | |
| **Family** | **CPU** | **PLC Port & Type** | Panel to PLC Cabling Components Required for Specific Port and Protocol being used. | |
| | | | **External DC Power Supply** | |
| | | | Using panel's Port2 DB 15-pin - female | |
| | | | Protocol(s) Supported | Components & Network Type |
| **CLICK** | all versions | Port1 RJ12 - 6 pin | AutomationDirect Modbus (CLICK) | **EA-2CBL** RS-232 |
| | | Port2 RJ12 - 6 pin | | |
| | Analog CPUs | Port3 Terminal block - 3 pin | | *** See Diagram 16** RS-485 |
| **Productivity Series** | all versions | RS-232 RJ12 - 6 pin | AutomationDirect Productivity3000 Serial (P3-550) | **EA-2CBL** RS-232 |
| | | RS-232 Port Terminal block - 3 pin | | *** See Diagram 17** RS-485 |
| **Do-more** | all versions | Port2 RJ12 - 6 pin | AutomationDirect Do-more Serial | **EA-2CBL** RS-232 |
| **SOLO Temperature Controller** | all versions | Data terminals | AutomationDirect SOLO Temperature Controller | *** See Diagram 20** RS-485 |
| **GS Drives** | all versions | Port RJ12 - 6 pin | AutomationDirect GS Drives | *** See Diagrams 18 and 19** RS-485 |
| *** Note: Wiring Diagrams for user constructed cables start on page 6-24.** | | | | |

## AutomationDirect *Direct*LOGIC DL05, DL06, D0-DCM Module & DL105 PLCs
## Panel Powered via external power supply, Port2 Communications

| Compatibility & Connection Chart | | | | |
|---|---|---|---|---|
| **Controller** | | | ***C-more* Micro-Graphic Panel** | |
| **Family** | **CPU** | **PLC Port & Type** | Panel to PLC Cabling Components Required for Specific Port and Protocol being used. | |
| | | | **External DC Power Supply** | |
| | | | Using panel's Port2 DB 15-pin - female | |
| | | | Protocol(s) Supported | Components & Network Type |
| ***Direct*LOGIC DL05** | all versions | Port 1 RJ12 - 6 pin | K-sequence, ***Direct*NET**, Modbus RTU | **EA-2CBL** RS-232 |
| | | Port 2 RJ12 - 6 pin | | |
| | D0-DCM | Port 1 RJ12 - 6 pin | K-sequence, ***Direct*NET**, Modbus RTU | **EA-2CBL** RS-232 |
| | | Port 2 DB15HD (female) | | **EA-2CBL-1** RS-232 |
| | | | | *** See Diagram 1** RS-422 |
| | | | Modbus RTU | *** See Diagram 2** RS-485 Modbus only |
| ***Direct*LOGIC DL06** | all versions | Port 1 RJ12 - 6 pin | K-sequence, ***Direct*NET**, Modbus RTU | **EA-2CBL** RS-232 |
| | | Port 2 DB15HD (female) | | **EA-2CBL-1** RS-232 |
| | | | | *** See Diagram 1** RS-422 |
| | | | Modbus RTU | *** See Diagram 2** RS-485 Modbus only |
| | D0-DCM | Port 1 RJ12 - 6 pin | K-sequence, ***Direct*NET**, Modbus RTU | **EA-2CBL** RS-232 |
| | | Port 2 DB15HD (female) | | **EA-2CBL-1** RS-232 |
| | | | | *** See Diagram 1** RS-422 |
| | | | Modbus RTU | *** See Diagram 2** RS-485 Modbus only |

*** Note: Wiring Diagrams for user constructed cables start on page 6-24.**

## *Direct*LOGIC DL205 PLCs, D2-DCM Module and WINPLC
## Panel Powered via external power supply, Port2 Communications

| Compatibility & Connection Chart | | | | |
|---|---|---|---|---|
| **Controller** | | | ***C-more* Micro-Graphic Panel** | |
| **Family** | **CPU** | **PLC Port & Type** | Panel to PLC Cabling Components Required for Specific Port and Protocol being used. | |
| | | | **External DC Power Supply** | |
| | | | Using panel's Port2 DB 15-pin - female | |
| | | | Protocol(s) Supported | Components & Network Type |
| ***Direct*LOGIC DL105** | all versions | Port 1 RJ12 - 6 pin | K-sequence | **EA-2CBL** RS-232 |
| ***Direct*LOGIC DL205** | D2-230 | Port 1 RJ12 - 6 pin | K-sequence | **EA-2CBL** RS-232 |
| | D2-240 | Port 1 RJ12 - 6 pin | K-sequence | **EA-2CBL** RS-232 |
| | | Port 2 RJ12 - 6 pin | K-sequence, *Direct*NET | |
| | D2-250-1 | Port 1 RJ12 - 6 pin | K-sequence, *Direct*NET, Modbus RTU | **EA-2CBL** RS-232 |
| | | Port 2 DB15HD (female) | | **EA-2CBL-1** RS-232 |
| | | | | *** See Diagram 1** RS-422 |
| | D2-260 | Port 1 RJ12 - 6 pin | K-sequence, *Direct*NET, Modbus RTU | **EA-2CBL** RS-232 |
| | | Port 2 DB15HD (female) | | **EA-2CBL-1** RS-232 |
| | | | | *** See Diagram 1** RS-422 |
| | | | Modbus RTU | *** See Diagram 2** RS-485 Modbus only |
| | D2-DCM | Port 1 DB 25 pin (female) | *Direct*NET | **EA-4CBL-2** RS-232 |
| | | | | *** See Diagram 5** RS-422 |
| | WINPLC | Port 1 RJ12 - 6 pin | Modbus RTU | **EA-2CBL** RS-232 |

*** Note: Wiring Diagrams for user constructed cables start on page 6-24.**

## *Direct*LOGIC DL305 PLCs and D3-DCM Module
## Panel Powered via external power supply, Port2 Communications

| Compatibility & Connection Chart | | | | |
|---|---|---|---|---|
| **Controller** | | | **C-more Micro-Graphic Panel** | |
| **Family** | **CPU** | **PLC Port & Type** | Panel to PLC Cabling Components Required for Specific Port and Protocol being used. | |
| | | | **External DC Power Supply** | |
| | | | Using panel's Port2 DB 15-pin - female | |
| | | | Protocol(s) Supported | Components & Network Type |
| ***Direct*LOGIC DL305** | D3-330 or D3-340 | D3-232-DCU DB 25 pin (female) | ***Direct*NET** | **EA-4CBL-2** RS-232 |
| | | D3-422-DCU DB 25 pin (female) | ***Direct*NET** | *** See Diagram 5** RS-422 |
| | D3-340 | Port 1 RJ11 - 4 pin | ***Direct*NET** | **EA-3CBL** RS-232 |
| | | Port 2 RJ11 - 4 pin | ***Direct*NET**, Modbus RTU | |
| | D3-350 | Port 1 RJ12 - 6 pin | K-sequence, ***Direct*NET** | **EA-2CBL** RS-232 |
| | | Port 2 DB 25 pin (female) | K-sequence, ***Direct*NET**, Modbus RTU | **EA-4CBL-2** RS-232 |
| | | | | *** See Diagram 3** RS-422 |
| | D3-DCM D3-350 only | Port 1 DB 25 pin (female) | ***Direct*NET** | **EA-4CBL-2** RS-232 |
| | | | | *** See Diagram 5** RS-422 |
| *** Note: Wiring Diagrams for user constructed cables start on page 6-24.** | | | | |

## *Direct*LOGIC DL405 PLCs and D4-DCM Module, SOLO and GS Drives Panel Powered via external power supply, Port2 Communications

| Compatibility & Connection Chart | | | | |
|---|---|---|---|---|
| **Controller** | | | **C-more Micro-Graphic Panel** | |
| **Family** | **CPU** | **PLC Port & Type** | Panel to PLC Cabling Components Required for Specific Port and Protocol being used. | |
| | | | **External DC Power Supply** | |
| | | | Using panel's Port2 DB 15-pin - female | |
| | | | Protocol(s) Supported | Components & Network Type |
| ***Direct*LOGIC DL405** | D4-430 | Port 0 DB 15 pin (female) | K-sequence | **EA-4CBL-1** RS-232 |
| | | Port 1 DB 25 pin (female) | K-sequence, ***Direct*NET** | **EA-4CBL-2** RS-232 |
| | | | | *** See Diagram 3** RS-422 |
| | D4-440 | Port 0 DB 15 pin (female) | K-sequence | **EA-4CBL-1** RS-232 |
| | | Port 1 DB 25 pin (female) | K-sequence, ***Direct*NET** | **EA-4CBL-2** RS-232 |
| | | | | *** See Diagram 3** RS-422 |
| | D4-450 | Port 0 DB 15 pin (female) | K-sequence | **EA-4CBL-1** RS-232 |
| | | Port 1 DB 25 pin (female) | K-sequence, ***Direct*NET**, Modbus RTU | **EA-4CBL-2** RS-232 |
| | | | | *** See Diagram 3** RS-422 |
| | | Port 3 DB 25 pin (female) | K-sequence, ***Direct*NET**, Modbus RTU | *** See Diagram 4** RS-422 |
| | | Port 2 RJ12 - 6 pin | K-sequence, ***Direct*NET** | **EA-2CBL** RS-232 |
| | D4-DCM | Port 1 DB 25 pin (female) | ***Direct*NET** | **EA-4CBL-2** RS-232 |
| | | | | *** See Diagram 5** RS-422 |
| *** Note: Wiring Diagrams for user constructed cables start on page 6-24.** | | | | |

## Allen-Bradley PLCs
## Panel Powered via external power supply, Port2 Communications

| Compatibility & Connection Chart | | | | |
|---|---|---|---|---|
| **Controller** | | | ***C-more* Micro-Graphic Panel** | |
| **Family** | **CPU** | **PLC Port & Type** | Panel to PLC Cabling Components Required for Specific Port and Protocol being used. | |
| | | | **External DC Power Supply**<br>**Powered from an external 24 VDC source** | |
| | | | Using panel's Port2<br>DB 15-pin - female | |
| | | | Protocol(s) Supported | Components & Network Type |
| **Allen-Bradley MicroLogix** | 1000, 1100, 1200, 1400, 1500 | 8-pin mini-din port | DF1 Full Duplex, DF1 Half Duplex | **EA-MLOGIX-CBL** RS-232 |
| | | RJ45 8-pin phone plug | DH485/AIC/AIC+ | **EA-DH485-CBL** RS-232 |
| **Allen-Bradley SLC500** | 5/03, 5/04, 5/05 | 9-pin D-sub port | DF1 Full Duplex, DF1 Half Duplex | **EA-SLC-232-CBL** RS-232 |
| | 5/01, 5/02, 5/03 | RJ45 8-pin phone plug | DH485/AIC/AIC+ | **EA-DH485-CBL** RS-232 |
| **Allen-Bradley ControlLogix** | all | 9-pin D-sub port | DF1 Full Duplex, DF1 Half Duplex | **EA-SLC-232-CBL** RS-232 |
| **Allen-Bradley CompactLogix** | all | 9-pin D-sub port | DF1 Full Duplex, DF1 Half Duplex | **EA-SLC-232-CBL** RS-232 |
| **Allen-Bradley FlexLogix** | all | 9-pin D-sub port | DF1 Full Duplex, DF1 Half Duplex | **EA-SLC-232-CBL** RS-232 |
| **Allen-Bradley PLC5** | all | 25-pin D-sub port | DF1 Full Duplex | **EA-PLC5-232-CBL** RS-232 |
| | | | | *** See Diagram 15** RS-422 |
| | | RJ45 8-pin phone plug | DH485/AIC/AIC+ | **EA-DH485-CBL** RS-232 |
| *** Note: Wiring Diagrams for user constructed cables start on page 6-24.** | | | | |

## GE, Mitsubishi, Omron, Modicon and Siemens PLCs
## Panel Powered via external power supply, Port2 Communications

| Compatibility & Connection Chart | | | | |
|---|---|---|---|---|
| **Controller** | | | ***C-more* Micro-Graphic Panel** | |
| **Family** | **CPU** | **PLC Port & Type** | Panel to PLC Cabling Components Required for Specific Port and Protocol being used. | |
| | | | **External DC Power Supply**<br>**Powered from an external 24 VDC source.** | |
| | | | Using panel's Port2<br>DB 15-pin - female | |
| | | | Protocol(s) Supported | Components & Network Type |
| **GE** | 90/30, 90/70 | 15-pin D-sub port | SNPX | **EA-90-30-CBL** RS-422 |
| | Micro 90, VersaMax Micro | RJ45 Port 1 | | *** See Diagram 11** RS-232 |
| | | 15-pin D-sub port Port 2 | | **EA-90-30-CBL** RS-422 |
| **Mitsubishi** | Melsec FX Series | 25-pin D-sub port | CPU Direct | **EA-MITSU-CBL** RS-422 |
| | | 8-pin mini-din port | | **EA-MITSU-CBL-1** RS-422 |
| | Q / QnA | 9-pin D-sub port | Q / QnA | *** See Diagram 13** RS-232C |
| | | 6-pin mini-din port | | *** See Diagram 14** RS-232C |
| **Omron** | C200 (Adapter), C500 | 25-pin D-sub port | Host Link | **EA-OMRON-CBL** RS-232 |
| | CJ1, CS1, CQM1, CPM1, CPM2 C200 CPU | 9-pin D-sub port | Host Link FINS | *** See Diagram 6 & 7** RS-232 |
| **Modicon** | 984 CPU, Quantum 113 CPU, AEG Modicon Micro Series 110 CPU | varies | Modbus RTU | *** See Diagram 8, 9 & 10** RS-232 |
| **Siemens** | S7-200 CPU | 9-pin D-sub port 0 or 1 | PPI | *** See Diagram 12** RS-485 |
| *** Note: Wiring Diagrams for user constructed cables start on page 6-24.** | | | | |

# Cables from *AutomationDirect*

| Cable Description | Cable Part No. |
|---|---|
| AutomationDirect Productivity Series, Do-more, CLICK, ***Direct***LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C) | **EA-2CBL** |
| ***Direct***LOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C). | **EA-2CBL-1** |
| ***Direct***LOGIC PLC RJ-11 port, D3-340 (RS-232C). | **EA-3CBL** |
| ***Direct***LOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C). | **EA-4CBL-1** |
| ***Direct***LOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C). | **EA-4CBL-2** |
| Allen-Bradley MicroLogix 1000, 1100, 1200, 1400 & 1500 (RS-232C) | **EA-MLOGIX-CBL** |
| Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix DF1 port (RS-232C) | **EA-SLC-232-CBL** |
| Allen-Bradley PLC-5 DF1 port (RS-232C) | **EA-PLC5-232-CBL** |
| Allen-Bradley MicroLogix, SLC 5-01/02/03, PLC5 DH485 port (RS-232C) | **EA-DH485-CBL** |
| GE 90/30, 90/70, Micro 90, Versamax Micro (Port2) 15-pin D-sub port (RS-422A) | **EA-90-30-CBL** |
| MITSUBISHI FX Series 25-pin port (RS-422A) | **EA-MITSU-CBL** |
| MITSUBISHI FX Series 8-pin mini-DIN (RS-422A) | **EA-MITSU-CBL-1** |
| OMRON Host Link (C200 Adapter, C500) (RS-232C) | **EA-OMRON-CBL** |

# Cables from *AutomationDirect* (cont'd)

Part No. EA-2CBL

Part No. EA-2CBL-1

Part No. EA-3CBL

Part No. EA-4CBL-1

Part No. EA-4CBL-2

Part No. EA-MLOGIX-CBL

Part No. EA-SLC-232-CBL

Part No. EA-PLC5-232-CBL

Part No. EA-DH485-CBL

Part No. EA-90-30-CBL

Part No. EA-MITSU-CBL

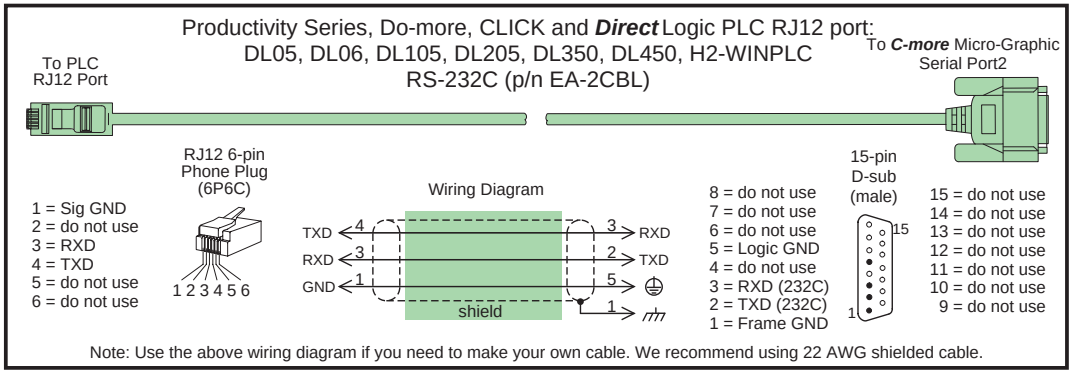
Part No. EA-MITSU-CBL-1

Part No. EA-OMRON-CBL

# Cables from *AutomationDirect* – Wiring Diagrams

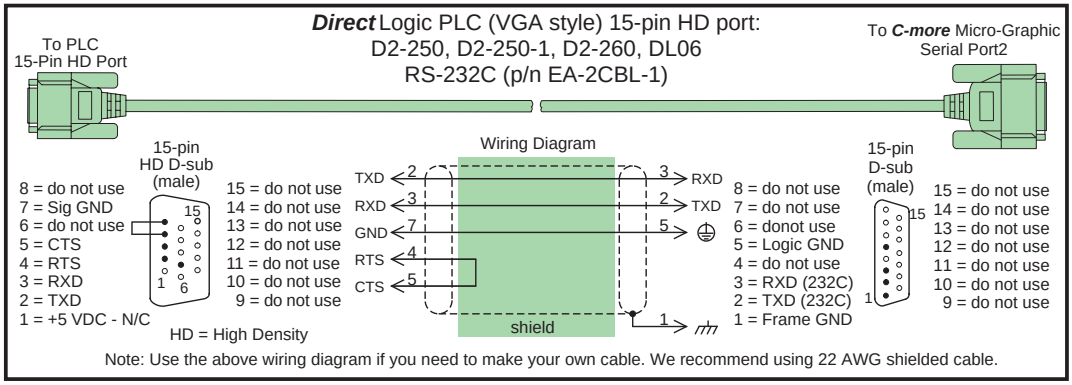
The following series of wiring diagrams show the connectors and wiring details for the communication cables that are used between the *C-more* Micro-Graphic panels and various PLCs. Part numbers are included with the pre-made cables that can be purchased from *AutomationDirect*. The information presented will allow the user to construct their own cables if so desired.

## CLICK & *Direct*LOGIC: EA-2CBL


Productivity Series, Do-more, CLICK and Direct Logic PLC RJ12 port:
DL05, DL06, DL105, DL205, DL350, DL450, H2-WINPLC
RS-232C (p/n EA-2CBL)
To PLC RJ12 Port
To C-more Micro-Graphic Serial Port2
RJ12 6-pin Phone Plug (6P6C)
1 = Sig GND
2 = do not use
3 = RXD
4 = TXD
5 = do not use
6 = do not use
1 2 3 4 5 6
Wiring Diagram
TXD 4 → 3 RXD
RXD 3 → 2 TXD
GND 1 → 5
shield → 1
15-pin D-sub (male)
8 = do not use
7 = do not use
6 = do not use
5 = Logic GND
4 = do not use
3 = RXD (232C)
2 = TXD (232C)
1 = Frame GND
15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

## *Direct*LOGIC: EA-2CBL-1

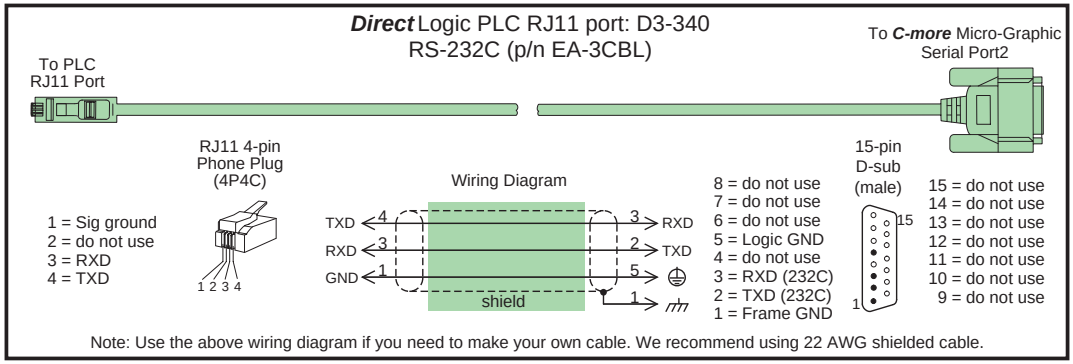

Direct Logic PLC (VGA style) 15-pin HD port:
D2-250, D2-250-1, D2-260, DL06
RS-232C (p/n EA-2CBL-1)
To PLC 15-Pin HD Port
To C-more Micro-Graphic Serial Port2
15-pin HD D-sub (male)
8 = do not use
7 = Sig GND
6 = do not use
5 = CTS
4 = RTS
3 = RXD
2 = TXD
1 = +5 VDC - N/C
15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use
HD = High Density
Wiring Diagram
TXD 2 → 3 RXD
RXD 3 → 2 TXD
GND 7 → 5
RTS 4
CTS 5
shield → 1
15-pin D-sub (male)
8 = do not use
7 = do not use
6 = donot use
5 = Logic GND
4 = do not use
3 = RXD (232C)
2 = TXD (232C)
1 = Frame GND
15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

# Cables from *AutomationDirect* – Wiring Diagrams (cont'd)

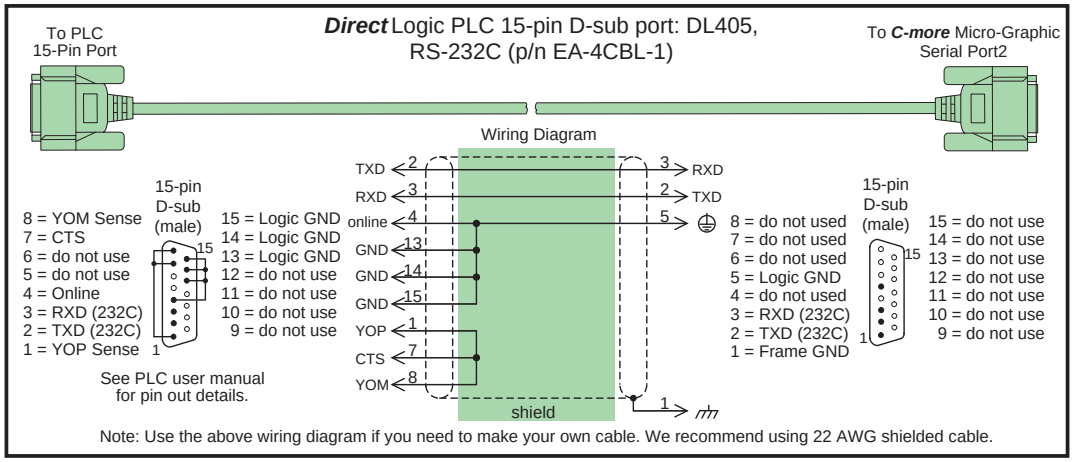
## *Direct*LOGIC:

### EA-3CBL




Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

### EA-4CBL-1

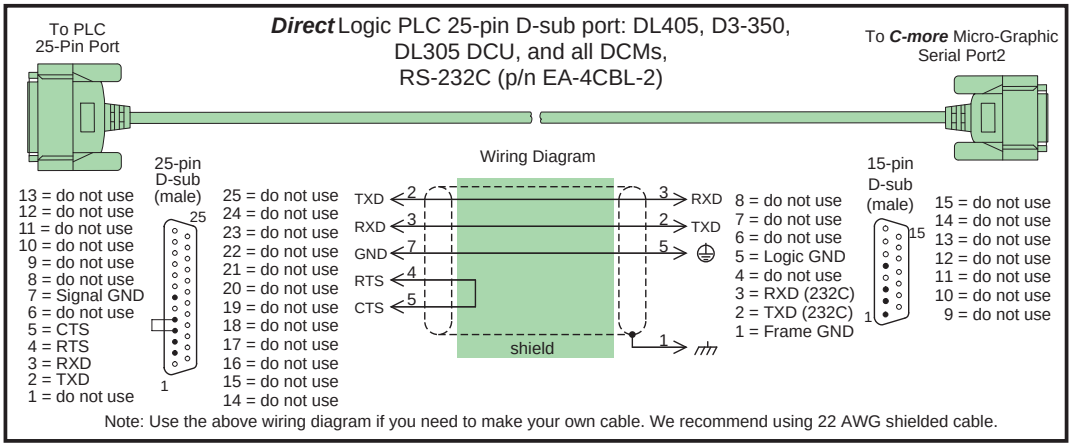



Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

# Cables from *AutomationDirect* – Wiring Diagrams (cont'd)

## *Direct*LOGIC:

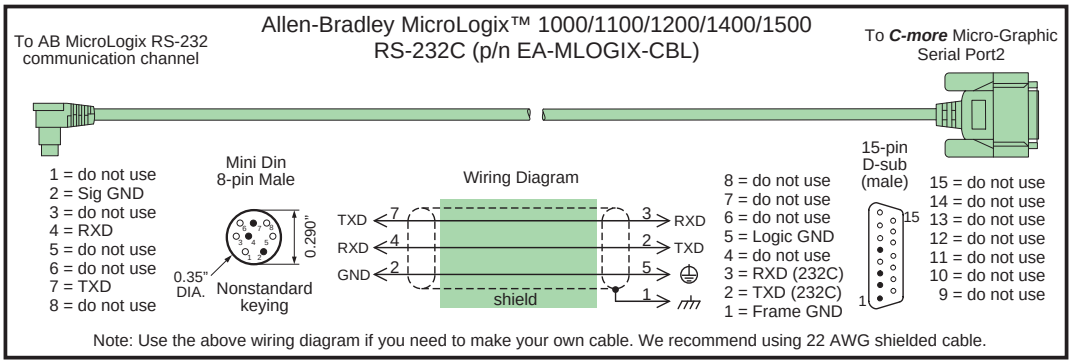
### EA-4CBL-2




Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

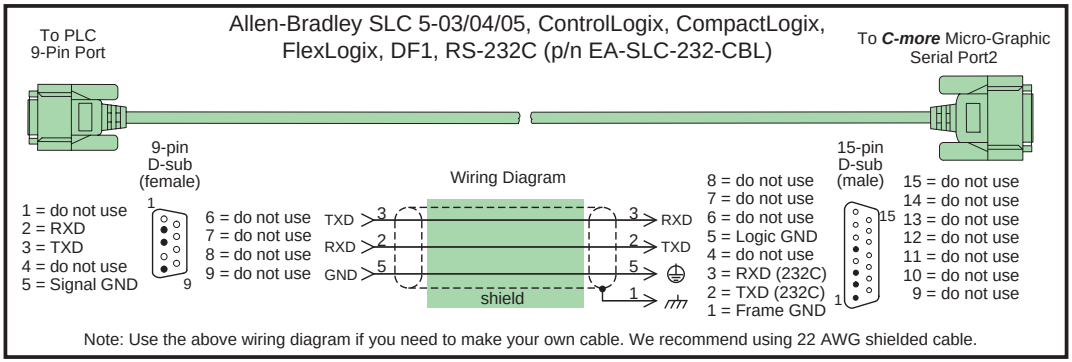
# Cables from *AutomationDirect* - Wiring Diagrams (cont'd)

## Allen-Bradley: EA-MLOGIX-CBL



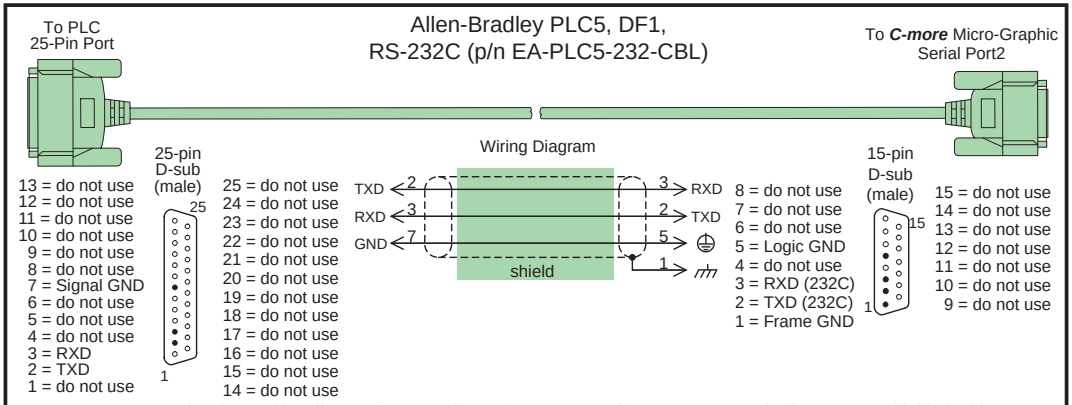

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

## EA-SLC-232-CBL


Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix, DF1, RS-232C (p/n EA-SLC-232-CBL)
To PLC 9-Pin Port
To C-more Micro-Graphic Serial Port2
9-pin D-sub (female)
1 = do not use
2 = RXD
3 = TXD
4 = do not use
5 = Signal GND
6 = do not use
7 = do not use
8 = do not use
9 = do not use
Wiring Diagram
TXD
RXD
GND
shield
8 = do not use
7 = do not use
6 = do not use
5 = Logic GND
4 = do not use
3 = RXD (232C)
2 = TXD (232C)
1 = Frame GND
15-pin D-sub (male)
15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

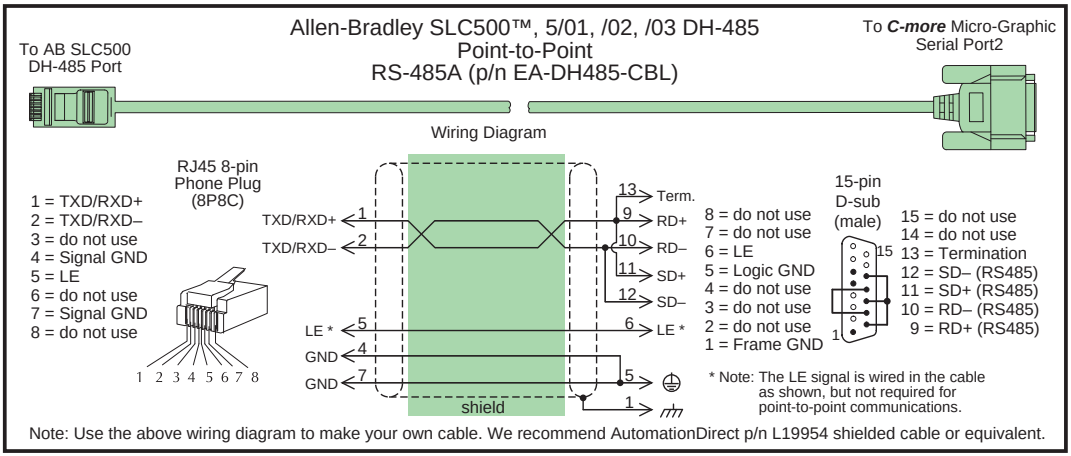
## EA-PLC5-232-CBL


Allen-Bradley PLC5, DF1,
RS-232C (p/n EA-PLC5-232-CBL)
To PLC 25-Pin Port
To C-more Micro-Graphic Serial Port2
25-pin D-sub (male)
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use
8 = do not use
7 = Signal GND
6 = do not use
5 = do not use
4 = do not use
3 = RXD
2 = TXD
1 = do not use
25 = do not use
24 = do not use
23 = do not use
22 = do not use
21 = do not use
20 = do not use
19 = do not use
18 = do not use
17 = do not use
16 = do not use
15 = do not use
14 = do not use
Wiring Diagram
TXD
RXD
GND
shield
8 = do not use
7 = do not use
6 = do not use
5 = Logic GND
4 = do not use
3 = RXD (232C)
2 = TXD (232C)
1 = Frame GND
15-pin D-sub (male)
15 = do not use
14 = do not use
13 = do not use
12 = do not use
11 = do not use
10 = do not use
9 = do not use

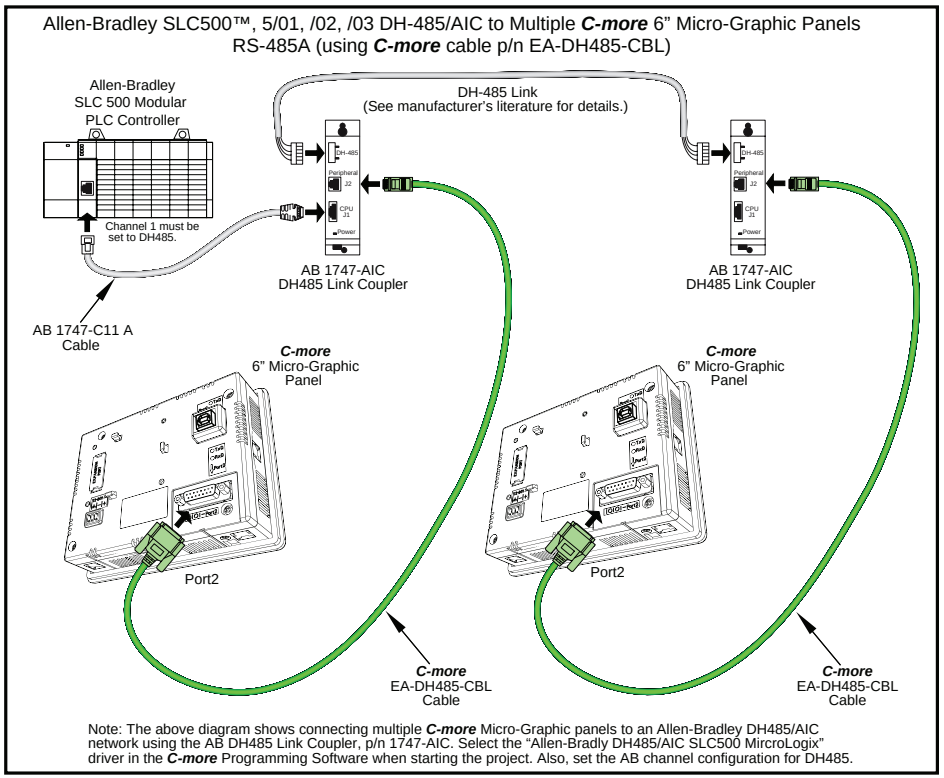
Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

# Cables from *AutomationDirect* - Wiring Diagrams (cont'd)

## Allen-Bradley: EA-DH485-CBL




Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19954 shielded cable or equivalent.

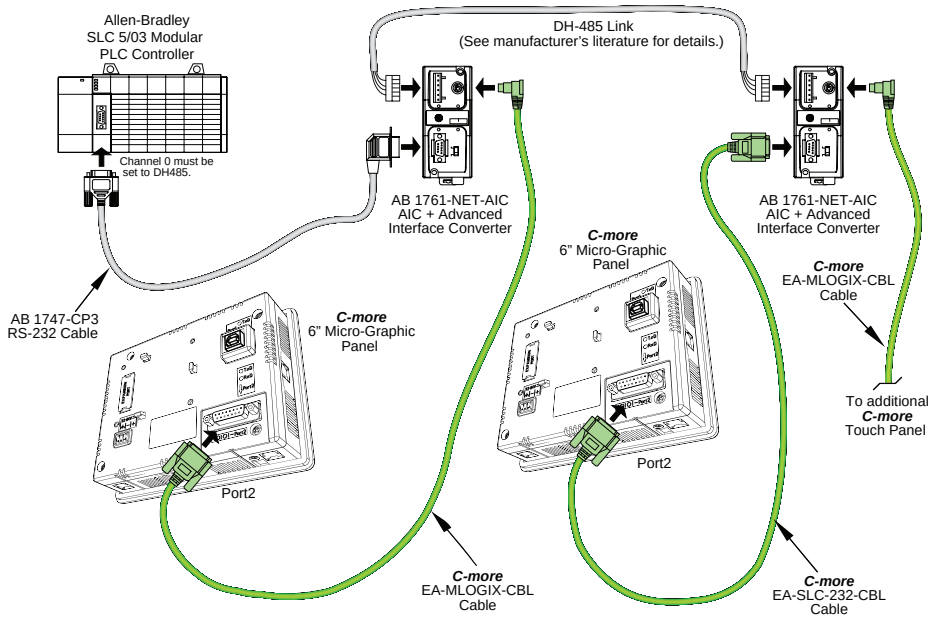



Note: The above diagram shows connecting multiple ***C-more*** Micro-Graphic panels to an Allen-Bradley DH485/AIC network using the AB DH485 Link Coupler, p/n 1747-AIC. Select the "Allen-Bradly DH485/AIC SLC500 MircroLogix" driver in the ***C-more*** Programming Software when starting the project. Also, set the AB channel configuration for DH485.

# Cables from *AutomationDirect* - Wiring Diagrams (cont'd)

## Allen-Bradley:

Allen-Bradley SLC500™ 5/03 DH-485/AIC to Multiple ***C-more*** 6" Micro-Graphic Panels
(using ***C-more*** cables p/n EA-MLOGIX-CBL, EA-SLC-232-CBL)

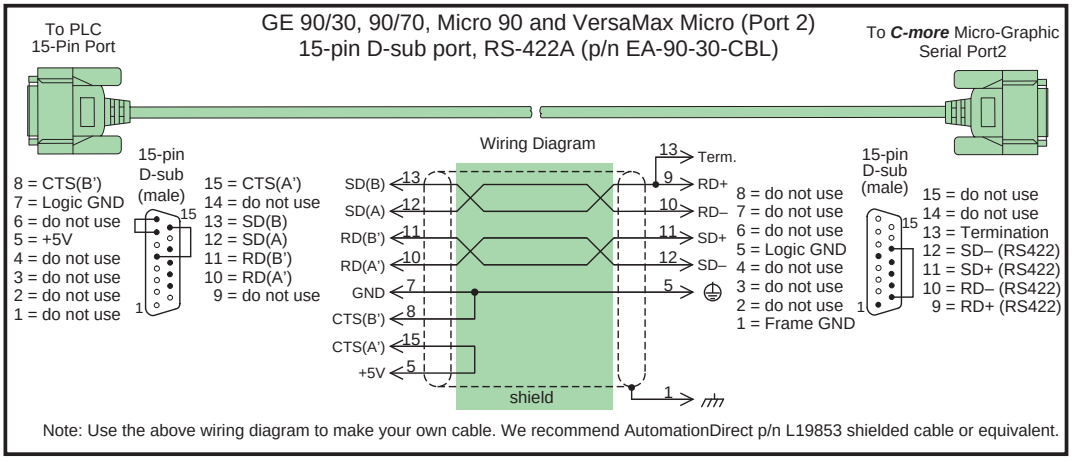



Note: The above diagram shows connecting multiple ***C-more*** Micro-Graphic panels to an Allen-Bradley DH485/AIC network using the AB AIC+ Advanced Interface Converter, p/n 1761-NET-AIC. Select the "Allen-Bradly DH485/AIC SLC500 MircroLogix" driver in the ***C-more*** Micro Programming Software when starting the project. Also, set the AB channel configuration for DH485.

# Cables from *AutomationDirect* - Wiring Diagrams (cont'd)

## GE:

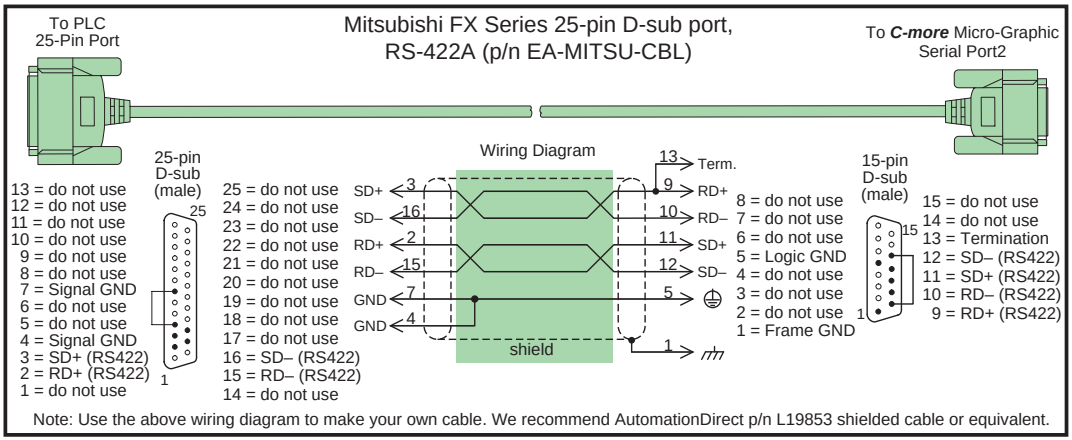
### *EA-90-30-CBL*




Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19853 shielded cable or equivalent.

## Mitsubishi:

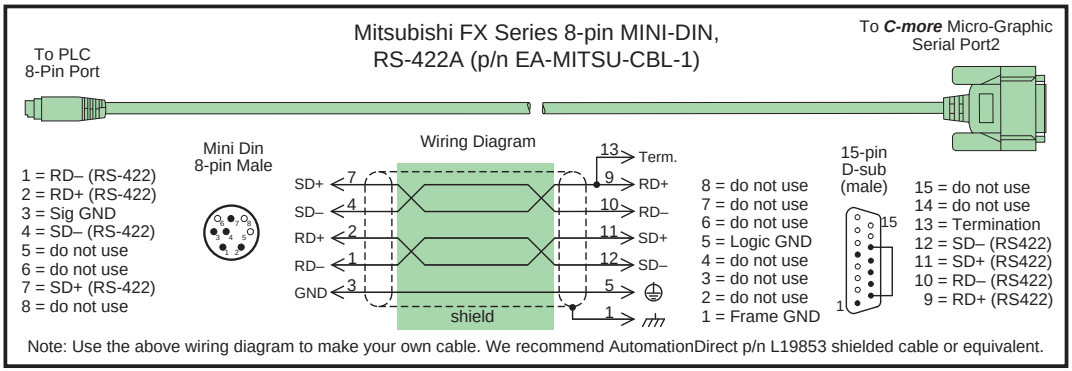
### *EA-MITSU-CBL*




Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19853 shielded cable or equivalent.

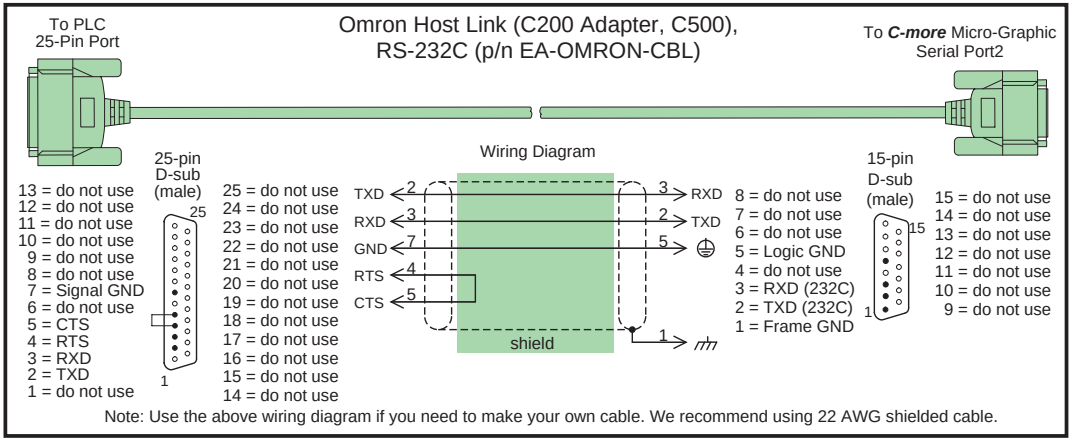
# Cables from *AutomationDirect* - Wiring Diagrams (cont'd)

## Mitsubishi: *EA-MITSU-CBL-1*




Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19853 shielded cable or equivalent.

## Omron: *EA-OMRON-CBL*



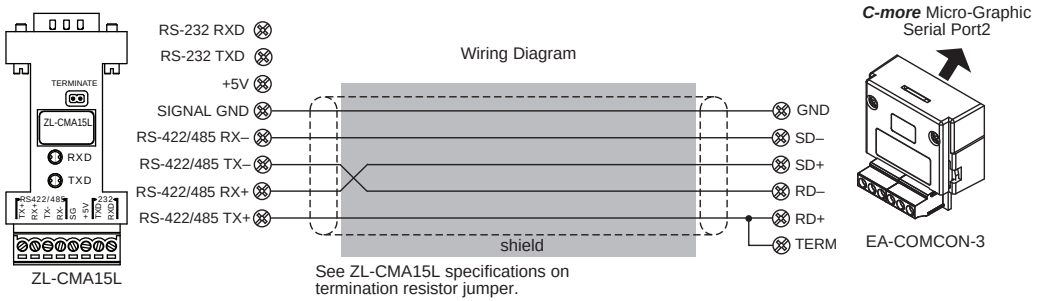

Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

# User Constructed Cables – Wiring Diagrams

## Diagram 1

**User Constructed**

***Direct*LOGIC ZIPLink ZL-CMA15L Adapter Module to EA-COMCON-3 Terminal Block Adapter**
**RS-422A – PLC D2-250 (-1), D2-260 or DL06 – Port 2**

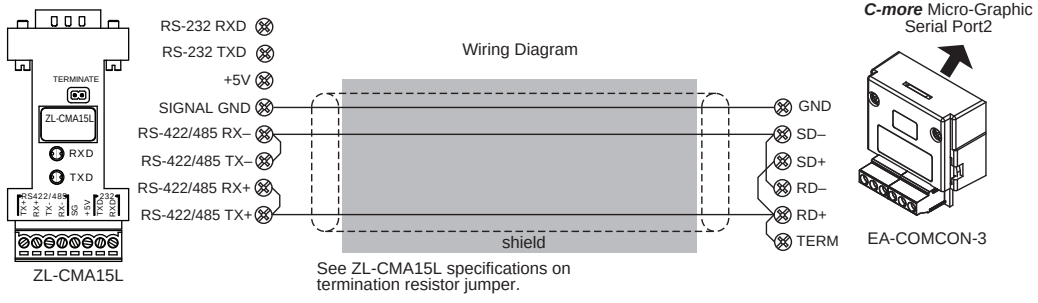



Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19954 shielded cable or equivalent.

## Diagram 2

**User Constructed**

***Direct*LOGIC ZIPLink ZL-CMA15L Adapter Module to EA-COMCON-3 Terminal Block Adapter**
**RS-485A – PLC D2-260 or DL06 – Port 2**



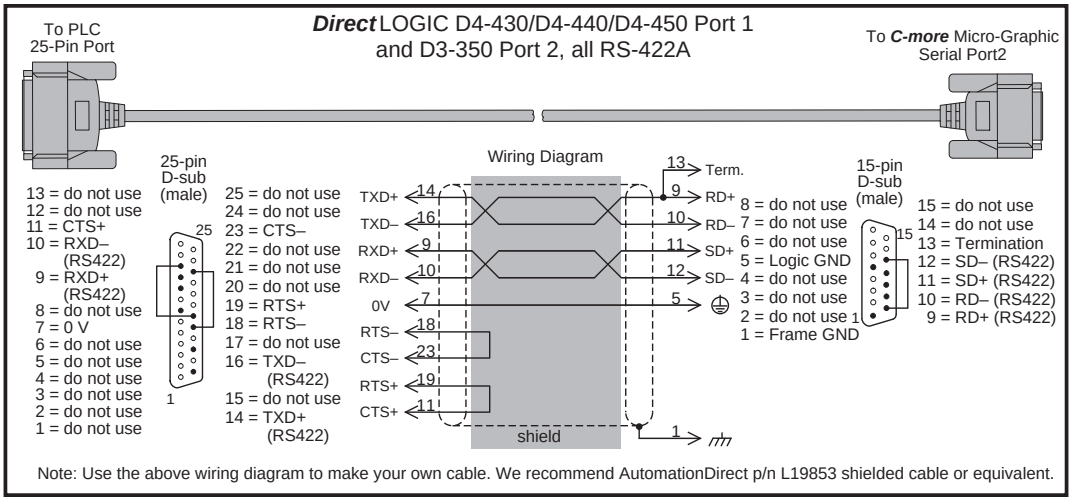

Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19853 shielded cable or equivalent.

***NOTE:** The RS-422 and RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-34 if more than one PLC will be connected to a panel.*

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 3

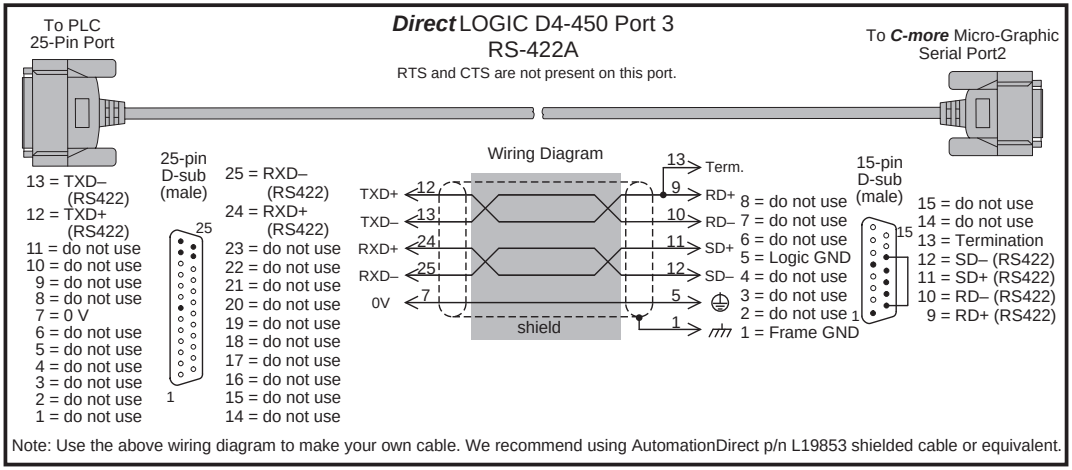
**User Constructed**




Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19853 shielded cable or equivalent.

## Diagram 4

**User Constructed**



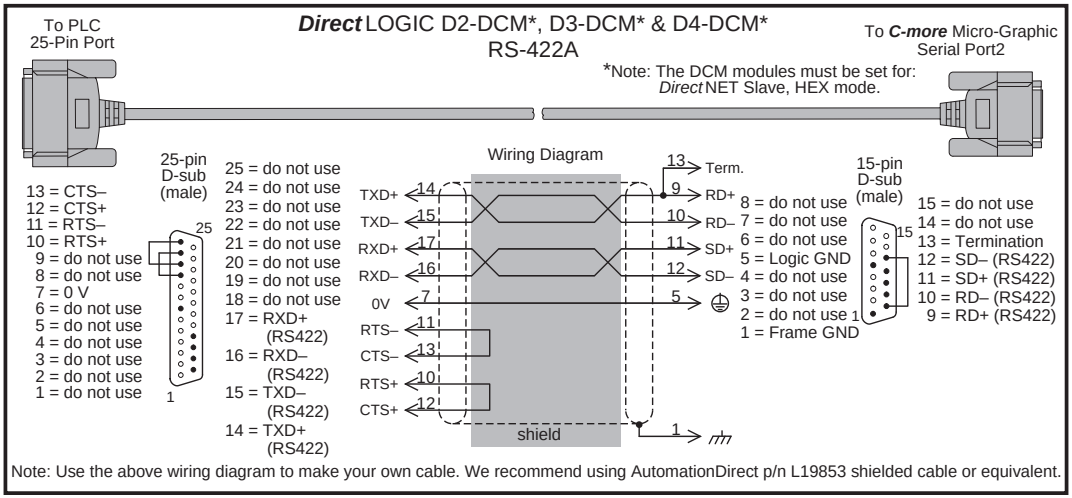

Note: Use the above wiring diagram to make your own cable. We recommend using AutomationDirect p/n L19853 shielded cable or equivalent.

***NOTE:*** *The RS-422 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-34 if more than one PLC will be connected to a panel.*

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 5

**User Constructed**

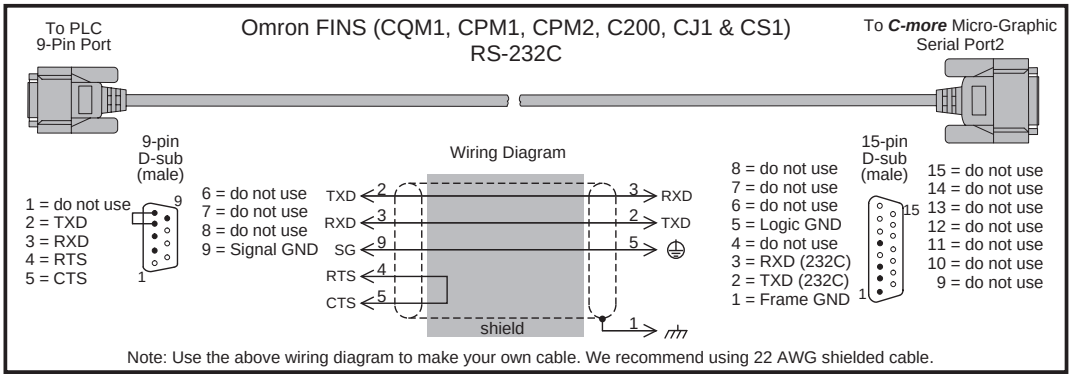



Note: Use the above wiring diagram to make your own cable. We recommend using AutomationDirect p/n L19853 shielded cable or equivalent.

***NOTE:*** *The RS-422 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-34 if more than one PLC will be connected to a panel.*

## Diagram 6

**User Constructed**

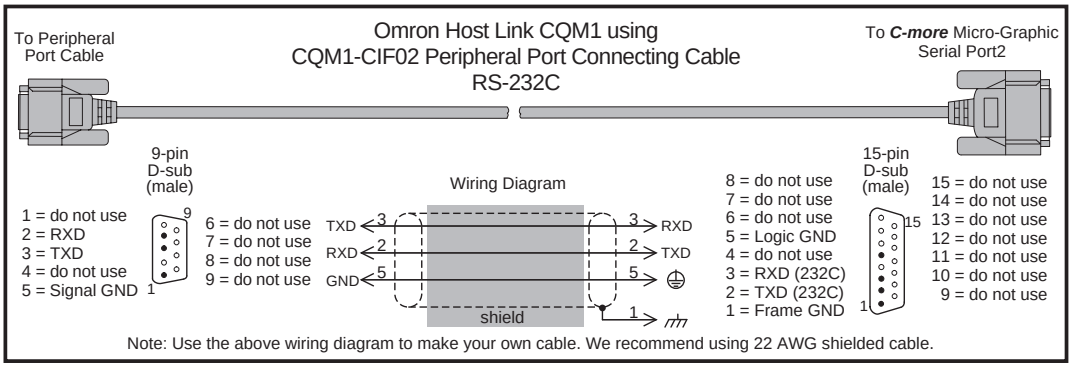



Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 7

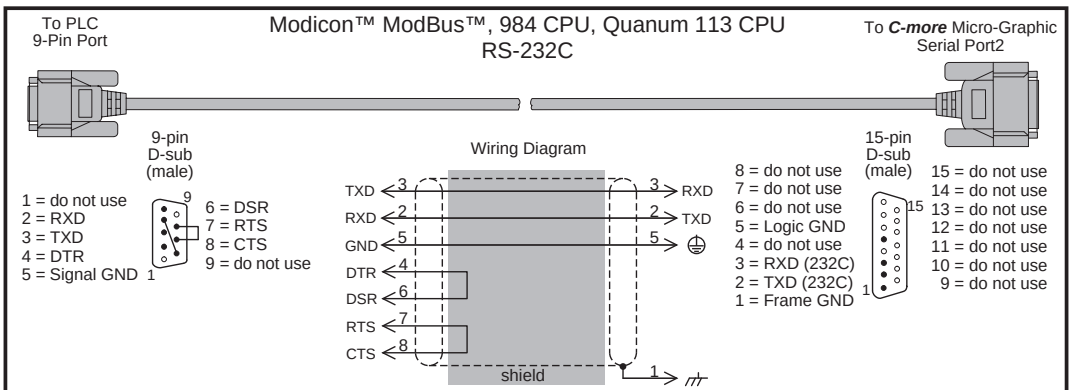
**User Constructed**




Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

## Diagram 8

**User Constructed**

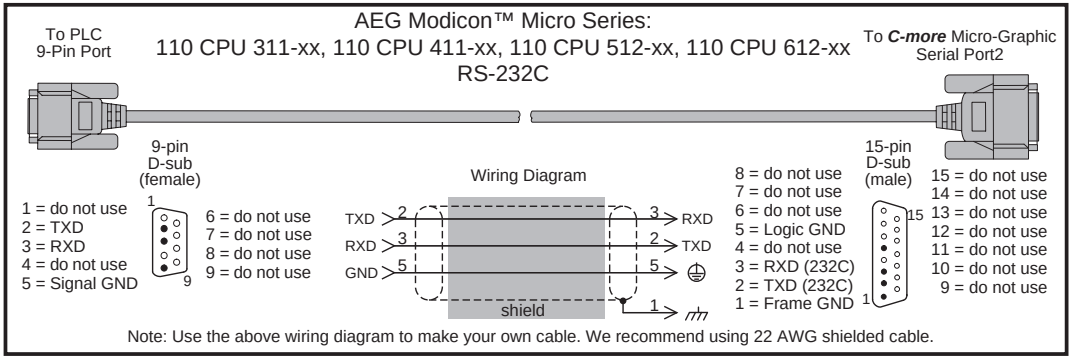



Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 9

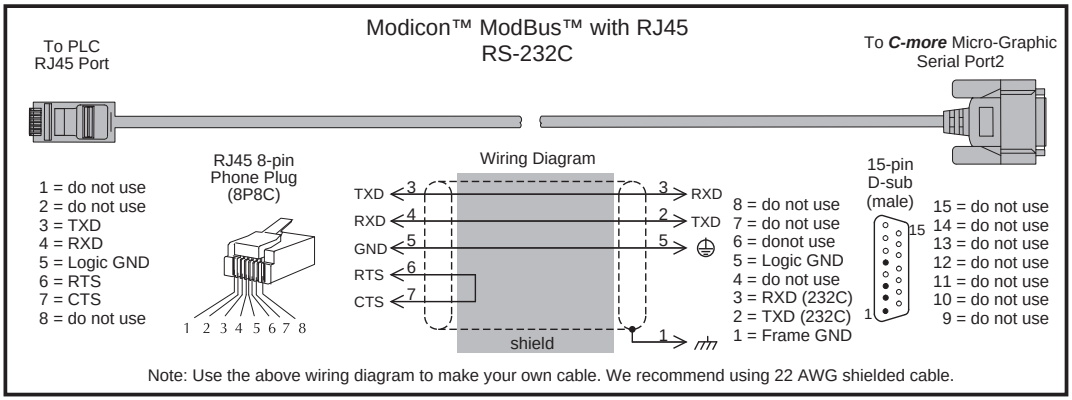
***User Constructed***




Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

## Diagram 10

***User Constructed***

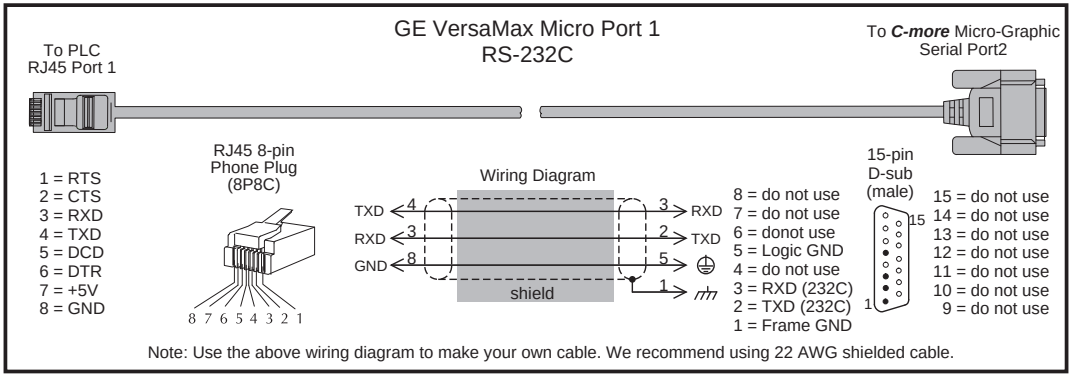



Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 11

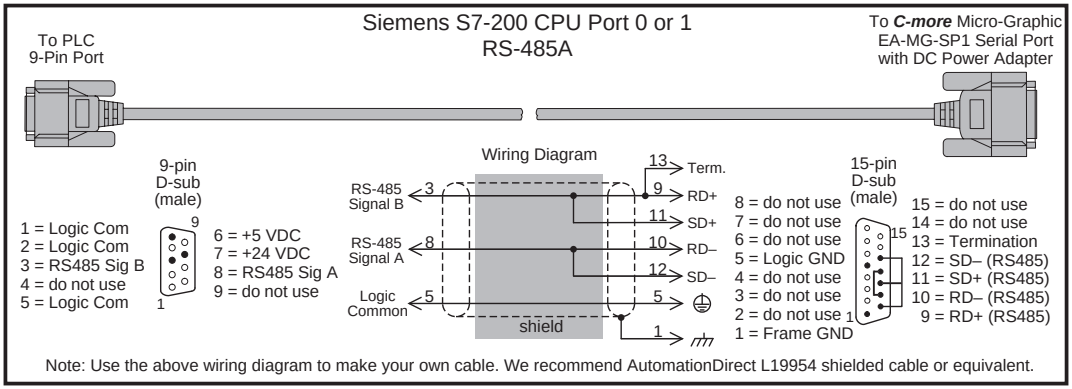
***User Constructed***




Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

## Diagram 12

***User Constructed***

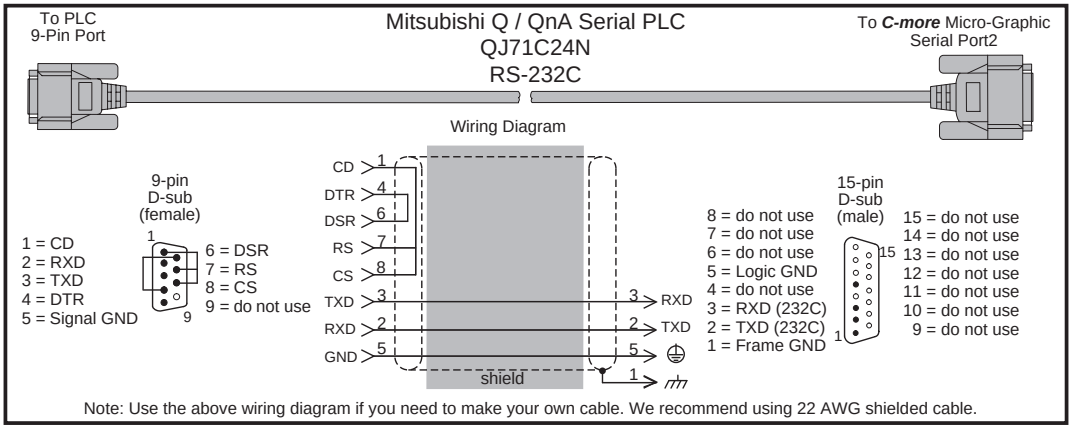



Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect L19954 shielded cable or equivalent.

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 13

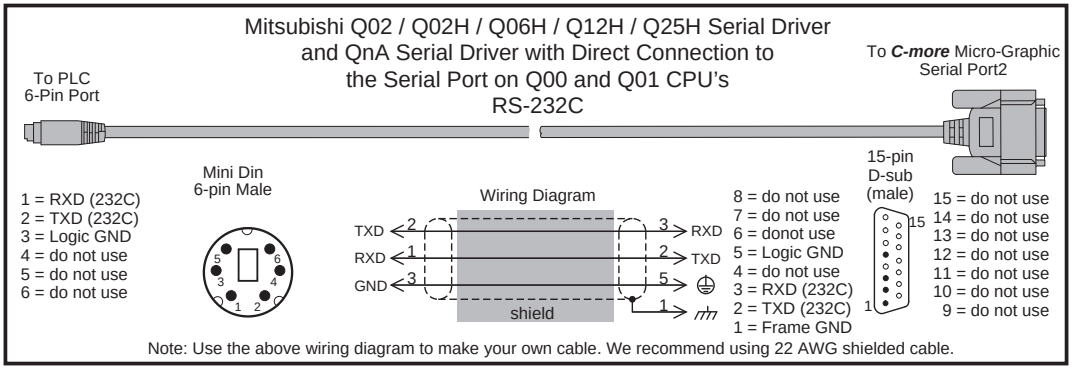
***User Constructed***




Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

## Diagram 14

***User Constructed***

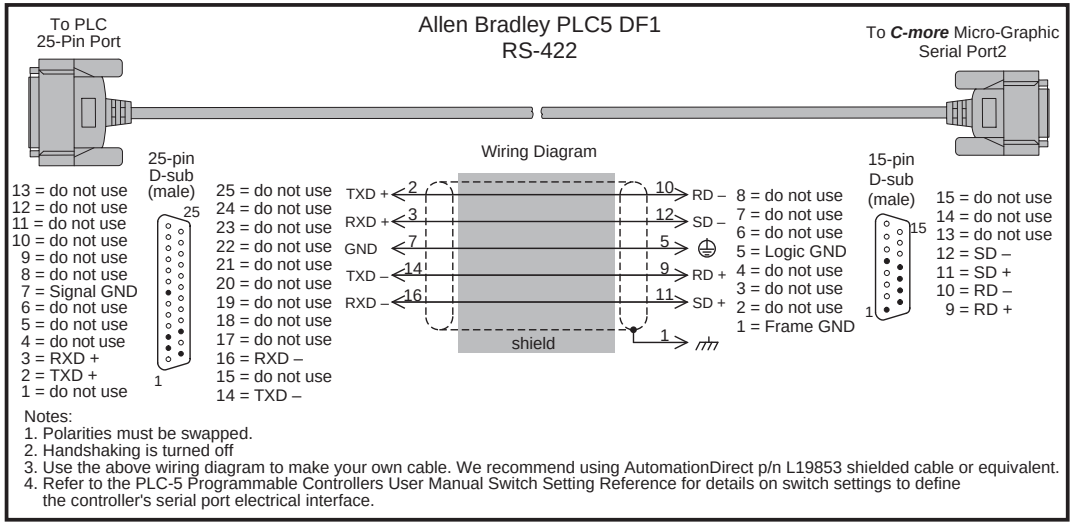



Note: Use the above wiring diagram to make your own cable. We recommend using 22 AWG shielded cable.

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 15

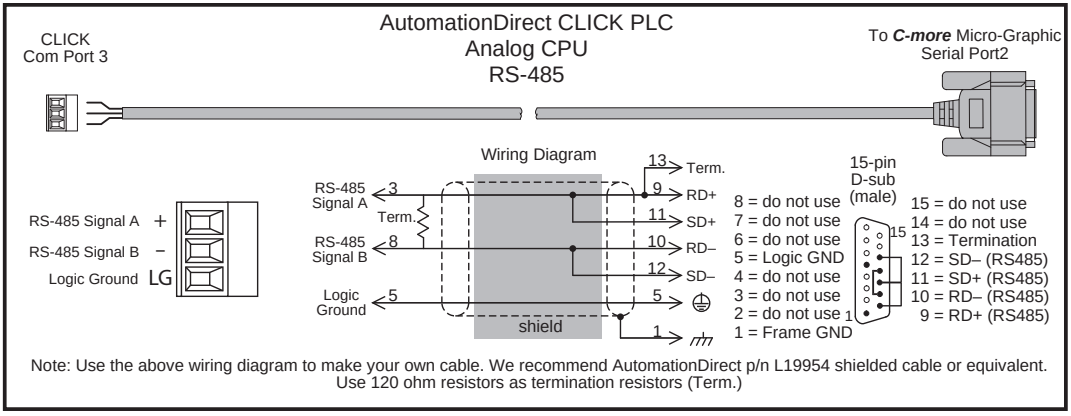
**User Constructed**




Notes:
1. Polarities must be swapped.
2. Handshaking is turned off
3. Use the above wiring diagram to make your own cable. We recommend using AutomationDirect p/n L19853 shielded cable or equivalent.
4. Refer to the PLC-5 Programmable Controllers User Manual Switch Setting Reference for details on switch settings to define the controller's serial port electrical interface.

## Diagram 16

**User Constructed**

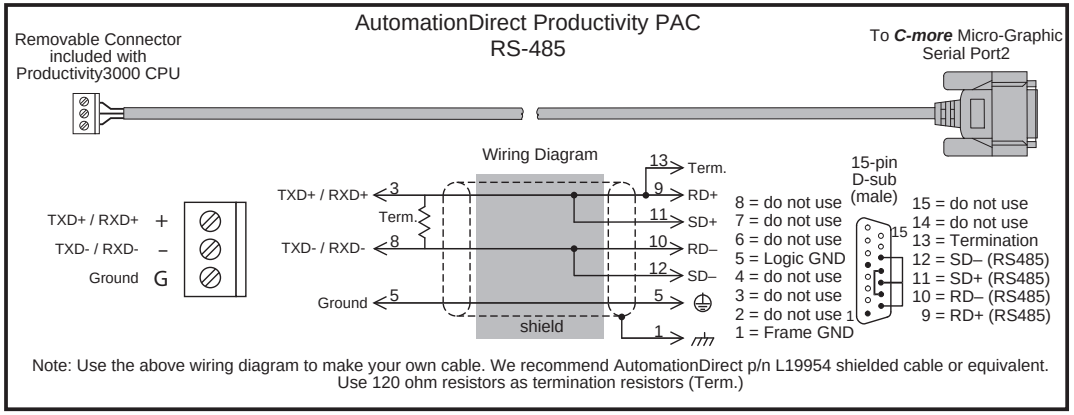



Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19954 shielded cable or equivalent. Use 120 ohm resistors as termination resistors (Term.)

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 17

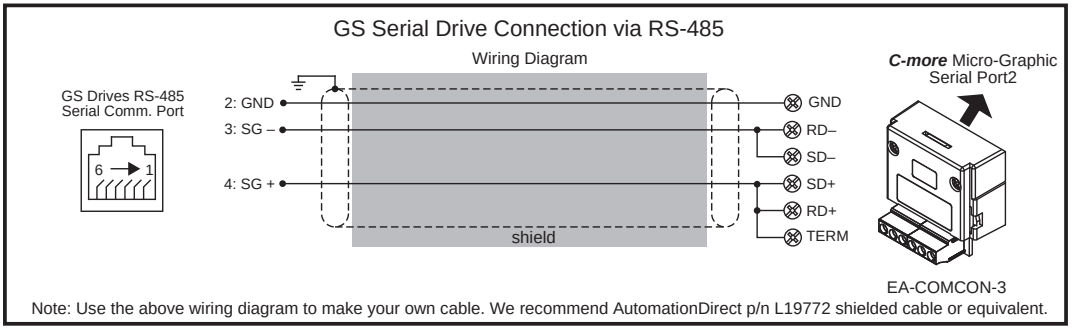
**User Constructed**




Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19954 shielded cable or equivalent. Use 120 ohm resistors as termination resistors (Term.)

## Diagram 18

**User Constructed**



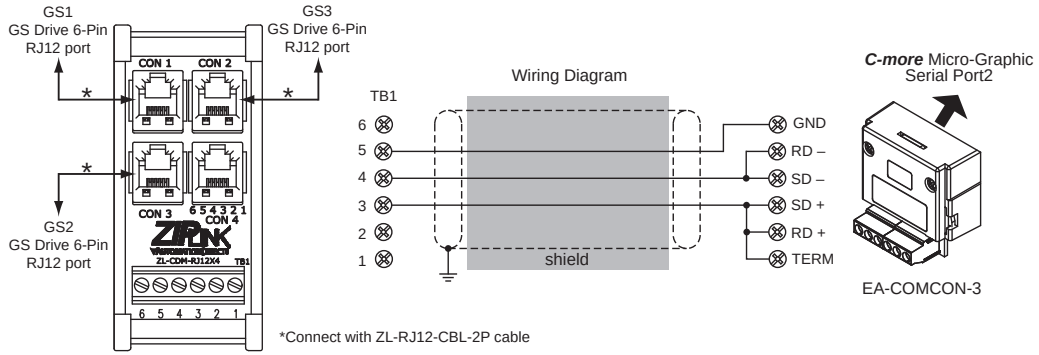

Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19772 shielded cable or equivalent.

# User Constructed Cables – Wiring Diagrams (cont'd)

## Diagram 19

***User Constructed***

Multiple GS Drives Connected to One C-more Micro-Graphic panel (RS-485)

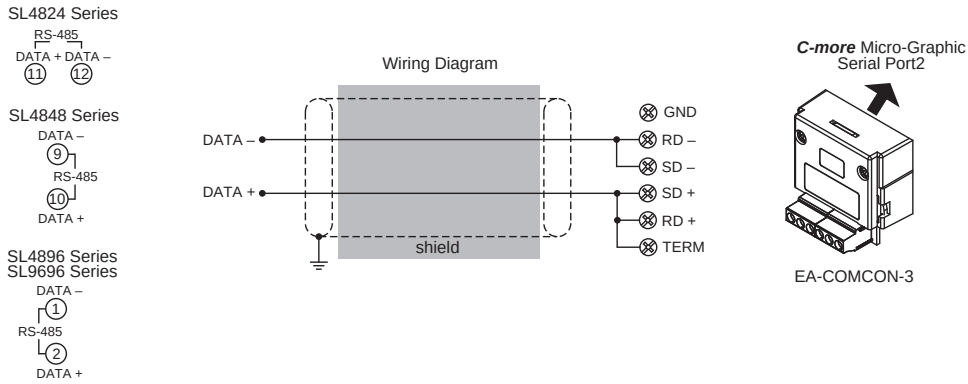



Notes: 1. The terminal connections at the ZL-CDM-RJ12X4 are different for multi-drop networks than for the direct drive to panel connection.
2. Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19954 shielded cable or equivalent.

## Diagram 20

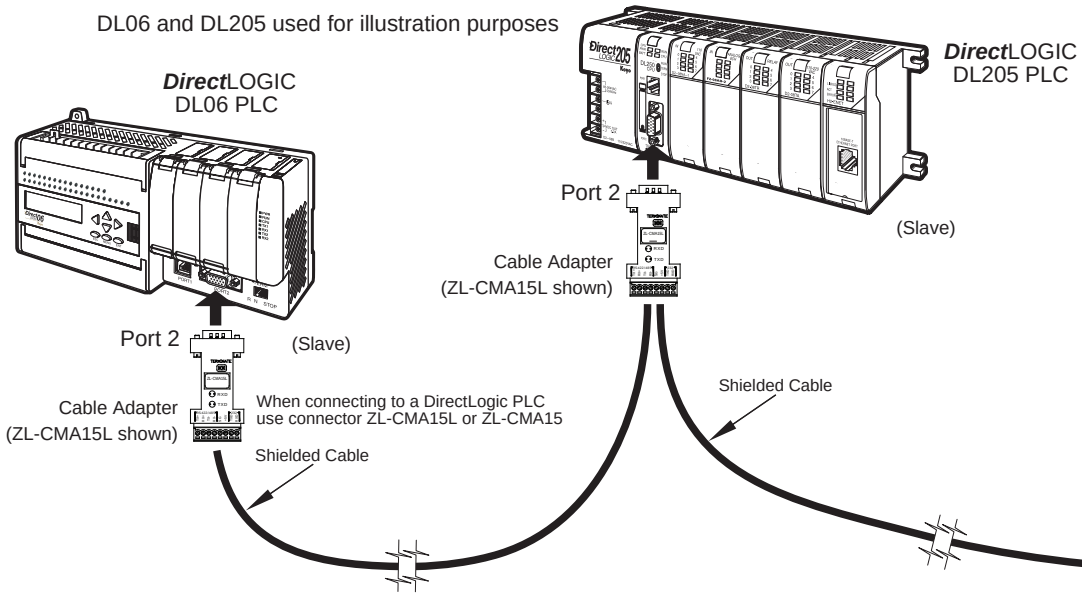
***User Constructed***

SOLO Temperature Controller to C-more Micro-Graphic Panel (RS-485)

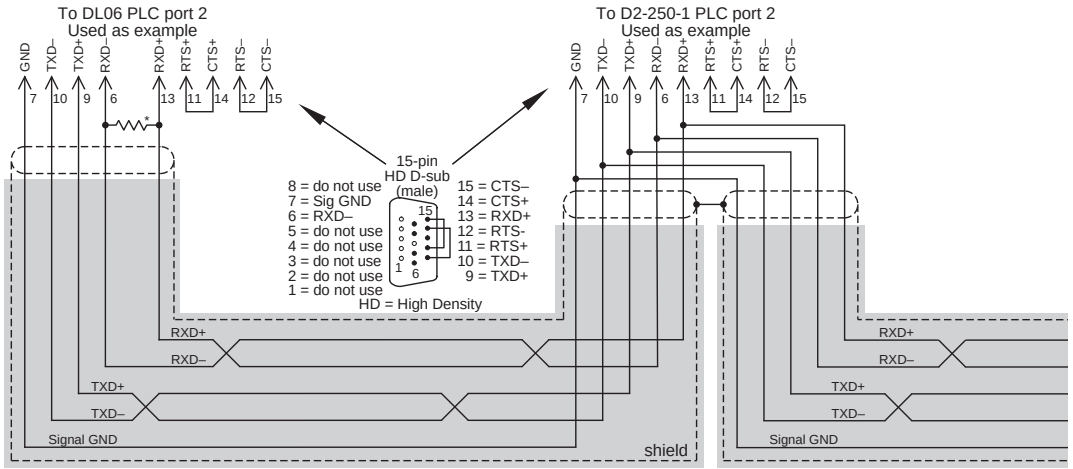



Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L199772 shielded cable or equivalent.

# RS-422A Multi-Drop Wiring Diagram Example



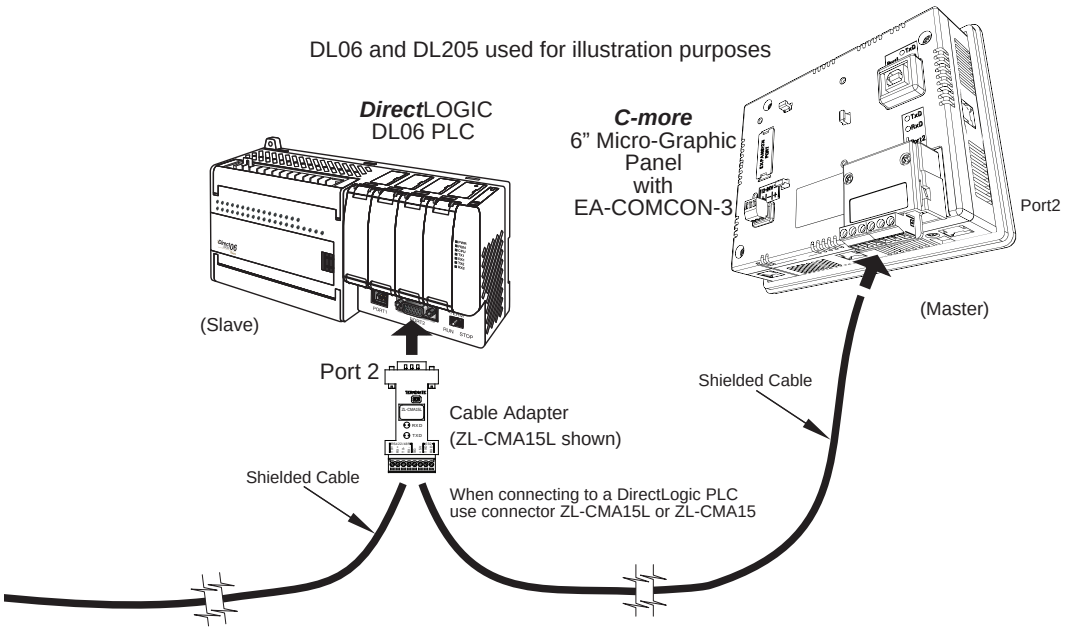

Notes: 1. We recommend Belden 8103 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)



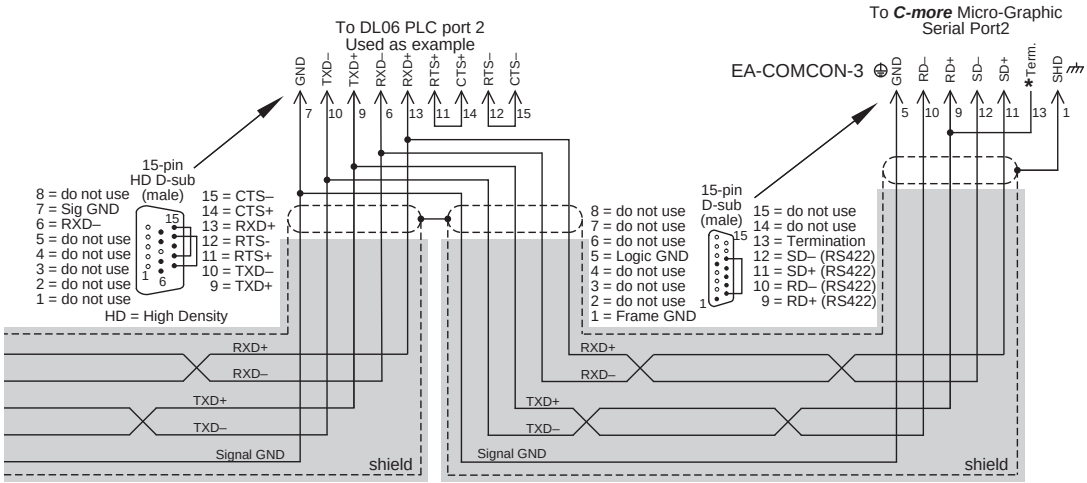

* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms).

Typical RS-422 Multi-Drop Wiring Diagram
using DirectLogic pin numbers to illustrate

# RS-422A Multi-Drop Wiring Diagram Example (cont'd)



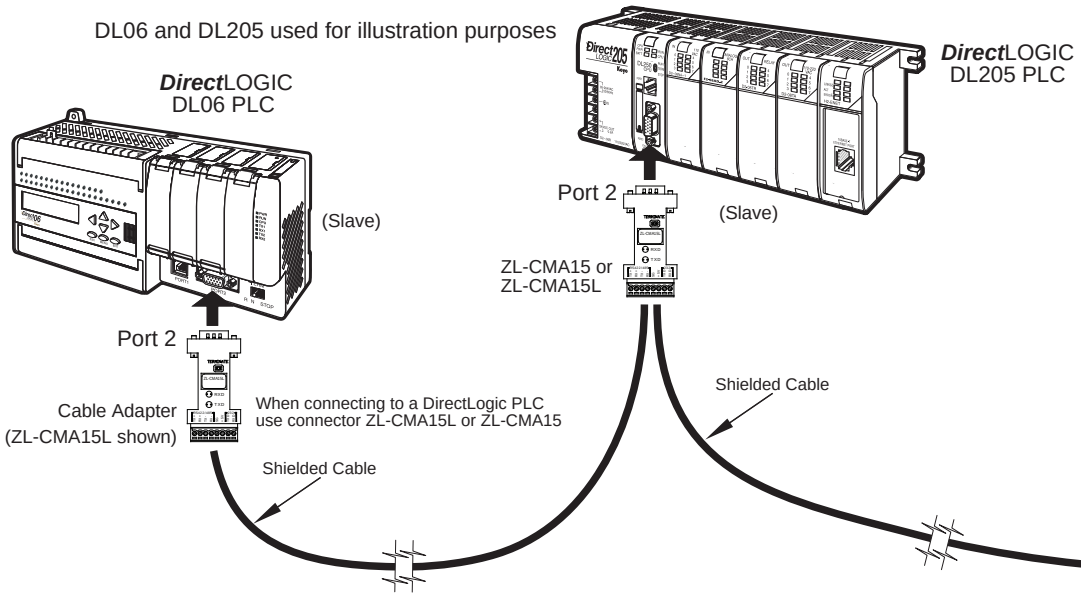

Notes: 1. We recommend Belden 8103 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)



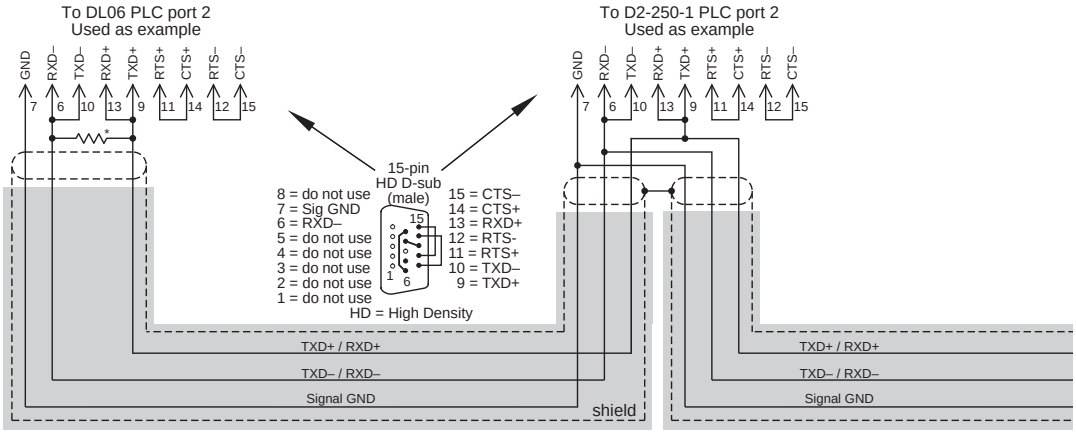

Typical RS-422 Multi-Drop Wiring Diagram (cont'd)
using DirectLogic pin numbers to illustrate

* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the ***C-more*** 6" Micro-Graphic Serial Port2 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then use an external resistor matched to the cable

# RS-485A Multi-Drop Wiring Diagram Example



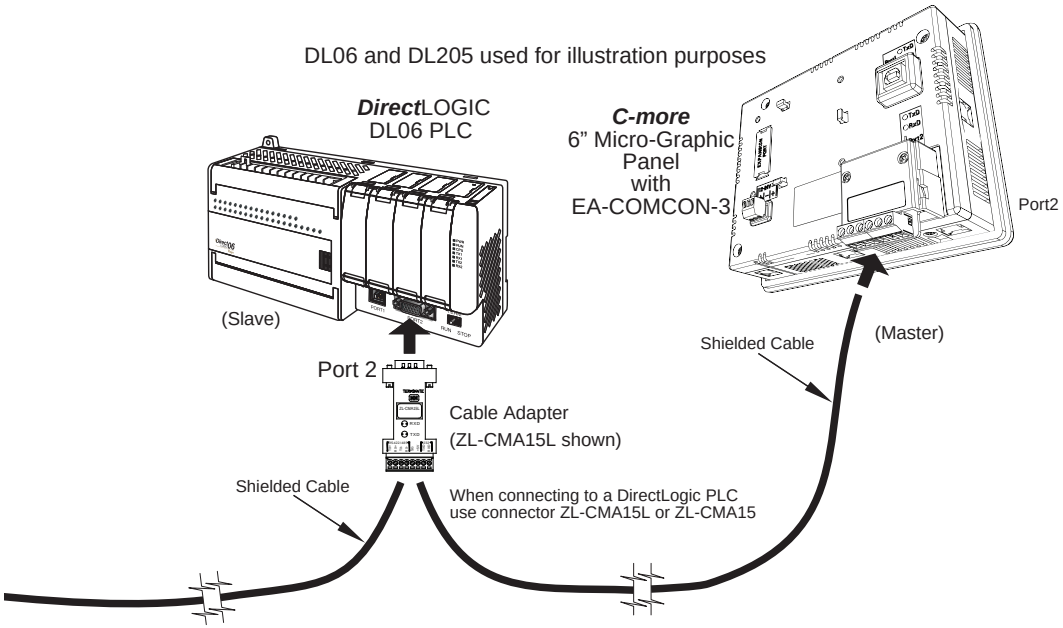

Notes: 1. We recommend Belden 9842 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)



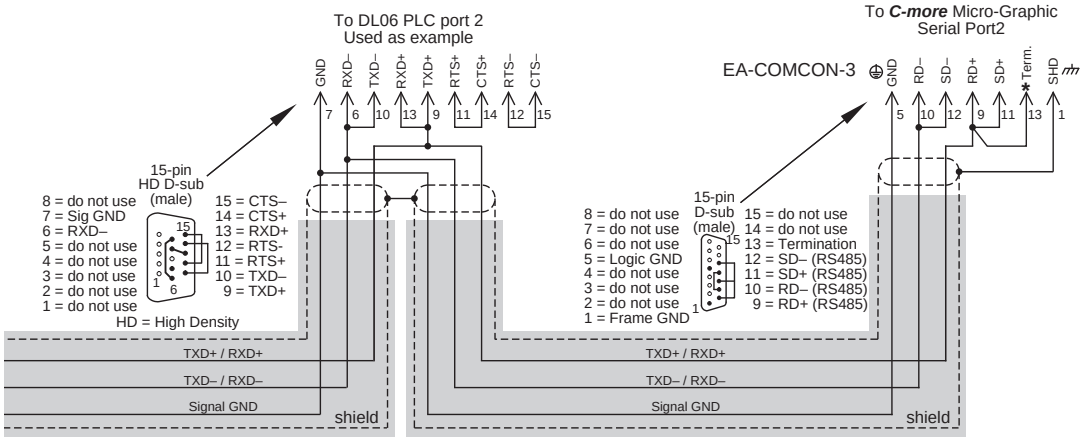

* Termination resistors required at both ends of the network to match the impedance of the cable (between 100 and 500 ohms).

Typical RS-485 Multi-Drop Wiring Diagram
using DirectLogic pin numbers to illustrate

# RS-485A Multi-Drop Wiring Diagram Example (cont'd)




Notes: 1. We recommend Belden 9842 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)


To DL06 PLC port 2
Used as example
To C-more Micro-Graphic Serial Port2
EA-COMCON-3
GND RXD– TXD– RXD+ TXD+ RTS+ CTS+ RTS– CTS–
7 6 10 13 9 11 14 12 15
GND RD– SD– RD+ SD+ Term. SHD
5 10 12 9 11 13 1
15-pin HD D-sub (male)
8 = do not use
7 = Sig GND
6 = RXD–
5 = do not use
4 = do not use
3 = do not use
2 = do not use
1 = do not use
15 = CTS–
14 = CTS+
13 = RXD+
12 = RTS-
11 = RTS+
10 = TXD–
9 = TXD+
HD = High Density
15-pin D-sub (male)
8 = do not use
7 = do not use
6 = do not use
5 = Logic GND
4 = do not use
3 = do not use
2 = do not use
1 = Frame GND
15 = do not use
14 = do not use
13 = Termination
12 = SD– (RS485)
11 = SD+ (RS485)
10 = RD– (RS485)
9 = RD+ (RS485)
TXD+ / RXD+
TXD– / RXD–
Signal GND
shield
TXD+ / RXD+
TXD– / RXD–
Signal GND
shield

## Typical RS-485 Multi-Drop Wiring Diagram (cont'd)

using DirectLogic pin numbers to illustrate

∗Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the ***C-more*** 6" Micro-Graphic Serial Port2 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then use an external resistor matched to the cable